

REMARKS

By this amendment, Applicants have amended claim 1 to clarify that the palladium crystallites are deposited by capillary injection on the support. See the specification, for example, page 3, lines 25-31. No new matter has been added. Applicants respectfully request entry of the amendment and allowance of the pending claims.

Rejection Under 35 U.S.C. § 102(b)

The Examiner rejects claims 1, 2 and 21 under 35 U.S.C. §102(b) as allegedly being anticipated by Gandhi *et al.* (EP 0786284). Applicants respectfully traverse this rejection.

The Examiner asserts that Gandhi discloses a catalyst comprising palladium on aluminum oxide and barium oxide, where the average particle size of palladium crystallites is 3 to 7nm. Thus, the Examiner concludes that Gandhi anticipates the present claims.

Applicants respectfully disagree with the Examiner's position. For a reference to anticipate the claims, all claim elements must be disclosed, taught or suggested by the prior art. The present claims are directed to catalyst compositions containing palladium crystallites having an average particle size between 3 and 7 nm. This crystallite size of palladium in combination with barium oxide (barium hydroxide as the precipitation agent) ensures that the catalyst has a high catalytic activity. Palladium crystallites of this size are not produced by conventional impregnation, but by capillary injection (see page 3, lines 15-22). Although, Gandhi discloses palladium particles sizes of 60 Å (6nm) to 1500Å (150nm), Gandhi's preferred palladium particle sizes are larger than the present claims 100 Å (10nm) to 600Å (60nm). Moreover, Gandhi's palladium particles are deposited on the support by immersion or impregnation (see column 2, lines 35-38), not by capillary injection as presently claimed. Further, Applicants discovery that by depositing the palladium crystallites by capillary injection using barium hydroxide as a precipitation agent leads to palladium crystallites with a small mean particle diameter and a narrow size-distribution where the palladium is stabilized by co-deposited barium oxide

against sintering, is not disclosed, taught or suggested by Gandhi. Accordingly, the present claims are not anticipated or rendered obvious to one of ordinary skill in the art upon reading Gandhi. It is respectfully submitted that Gandhi does not anticipate the present claims and Applicants respectfully request this rejection to be withdrawn.

Rejection Under 35 U.S.C. § 103(a)

The Examiner rejects claims 3-20 under 35 U.S.C. §103(a) as allegedly being obvious over Gandhi *et al.* (EP 0786284) and Mussmann *et al.* (US Patent No. 6,080,375). Applicants respectfully traverse this rejection.

The Examiner asserts that Gandhi discloses a catalyst comprising palladium on aluminum oxide and barium oxide, where the average particle size of palladium crystallites is 3 to 7nm. The Examiner concedes that Gandhi does not disclose the elements of claims 3-20, but combines Gandhi with Mussmann to conclude that the present claims are allegedly obvious.

Applicants respectfully disagree with the Examiner's position. To establish a *prima facie* case of obviousness, all of the claim elements must be taught or suggested by the prior art. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As stated above, the present claims are directed to catalyst compositions containing palladium crystallites having an average particle size between 3 and 7 nm. This crystallite size of palladium in combination with barium oxide (barium hydroxide as the precipitation agent) ensures that the catalyst has a high activity. Palladium crystallites of this size are not produced by conventional impregnation, but by capillary injection. Gandhi's palladium particles are deposited on the support by immersion or impregnation (see column 2, lines 35-38), not by capillary injection as presently claimed. Moreover, Gandhi does not attribute the palladium particle size in combination with barium oxide to high catalytic activity. Further, Applicants discovery that by depositing the palladium crystallites by capillary injection using barium hydroxide as a precipitation agent leads to palladium crystallites with a small mean particle diameter and a narrow size-distribution where the palladium is stabilized by co-deposited barium oxide against sintering, is not disclosed, taught or suggested by Gandhi. Accordingly, the present claims are not obvious to one of ordinary skill in the art upon reading Gandhi.

With regard to Mussmann, the catalyst is applied to the support by impregnation (see column 4, lines 40-42), not by capillary injection. Moreover, Mussmann does not disclose, teach, or suggest palladium crystallites having an average particle size between 3 and 7 nm, in combination with the barium oxide that imparts high catalytic activity. Accordingly, the present claims are not obvious to one of ordinary skill in the art upon reading Mussmann.

In summary, neither Gandhi nor Mussmann alone or in combination disclose, teach or suggest the presently claimed invention. Further, neither Gandhi nor Mussmann recognize that catalytic activity can be improved by using palladium crystallites having an average particle size between 3 and 7 nm, in combination with barium oxide. Moreover, neither Gandhi nor Mussmann disclose, teach or suggest depositing palladium crystallites by capillary injection on the support. Accordingly, Applicants respectfully request withdrawal of the rejection.

Conclusion

In view of the foregoing amendments, and the remarks set forth above, reconsideration and allowance are respectfully solicited.

Enclosed is the fee for a two-month extension of time. No additional fee is believed to be due with respect to the filing of this amendment. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicant's attorney at the telephone number provided below.

Respectfully submitted,



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